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Floristic diversity of classified forest and partial faunal reserve of Comoé-Léraba, southwest Burkina Faso

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Abstract: The classified forest and partial faunal reserve of Comoé-Léraba belongs to the South Sudanian phytogeographical sector of Burkina Faso and is located in the most humid area of the country. This study aims to present a detailed list of the Comoé-Léraba reserve's flora for a better knowledge and conservation. Floristic inventories have permitted to record 540 plant species belonging to 342 genera and 91 families, thus representing 26.12% of Burkina Faso's phytodiversity (2067 species). Fabaceae and Poaceae with 89 and 51 species respectively, were the dominant families. The vegetation is characterized by the dominance of both phanerophytes (45.51%) and therophytes (32.73%). The importance of Guineo–Congolian species proves that the Comoé-Léraba flora belongs to the Sudano–Guinean transition sector. Comoé-Léraba also accounts the highest number of exclusive species followed by the reserve of Sahel in the country. Exclusive species bring out its value in flora conservation.

Key words: protected area, phytodiversity, life form, phytogeography, savanna

INTRODUCTION

An updated checklist of the vascular plants of Burkina Faso with 2067 species was recently published (Thiombiano *et al.* 2012), with most of these species documented from protected areas. Nevertheless, published lists of phytodiversity in protected areas are scarce. There are 81 protected areas in the country (Thiombiano and Kampmann 2010), but local floras have been published for only three of them: Bangr-Weoogo urban park (Gnoumou *et al.* 2008), the partial faunal reserve of Pama (Mbaygone *et al.* 2008) and Arly National Park (Ouédraogo *et al.* 2011).

Among Burkina Faso's protected areas, the Comoé-Léraba reserve is unique due to its geographical position and flora. The reserve is located in the most humid zone of the country. The vegetation is dominated by woodland and islands of tropical dry forest, with some patches of dense non-riparian forests (Neumann and Müller 1999; Gnoumou 2011b), which are very rare habitats in Burkina Faso. The annual rainfall may reach 1000 mm and the rainy days per year exceed 90 days. Hence, a floristic inventory can be expected to include many exclusive species in comparison to the other parts of the country. With the ultimate objective toassess floristic diversity for better conservation and management of the Comoé-Léraba reserve, this paper aims to provide a detailed floristic list.

MATERIALS AND METHODS

Study site

The classified forest and partial faunal reserve of Comoé-Léraba is located in the southwest part of Burkina Faso (Figure 1) between the latitudes 10°02′ and 09°31′ N and the longitudes 004°55′ and 004°13′ W. It was established from two existing classified forests (Diéfoula and Logoniégué) in 2001 and covers 125,000 ha. The Comoé-Léraba reserve belongs to Category IV of IUCN protected areas (IUCN 2004) and is a Ramsar site since 2009 (http://www.ramsar.org; Ramsar 2014) mainly due to the two permanent rivers (Comoé and Léraba) that cross the reserve. The reserve is managed by the local association "AGEREF" (Comoé-Léraba classified forest and partial faunal reserve's inter-village association of natural resource management). Hunting and ecotourism are permitted under a forester agreement in a specific period of each year during the dry season. Land use pressure is high in the cultivation zone surrounding the reserve. Indeed, the conservation of this protected area is sustained by the integrated management based on local participation (through the AGEREF). After 13 years, positive results (*e.g.,* reconstitution of fallow land) have been obtained, according to the survey of vegetation structure in the protected area (Gnoumou *et al.* 2011b).

Data collection

The species list was established from phytosociological surveys, carried out from 2007 to 2010 and covering all vegetation types of the protected area (dense dry forest, riparian forest, woodland, woodland savanna, tree savanna, shrubs-savanna, bush of termite mound, grove both on termite mounds and pond). It was supplemented by collection data from the University of Ouagadougou Herbarium (OUA).

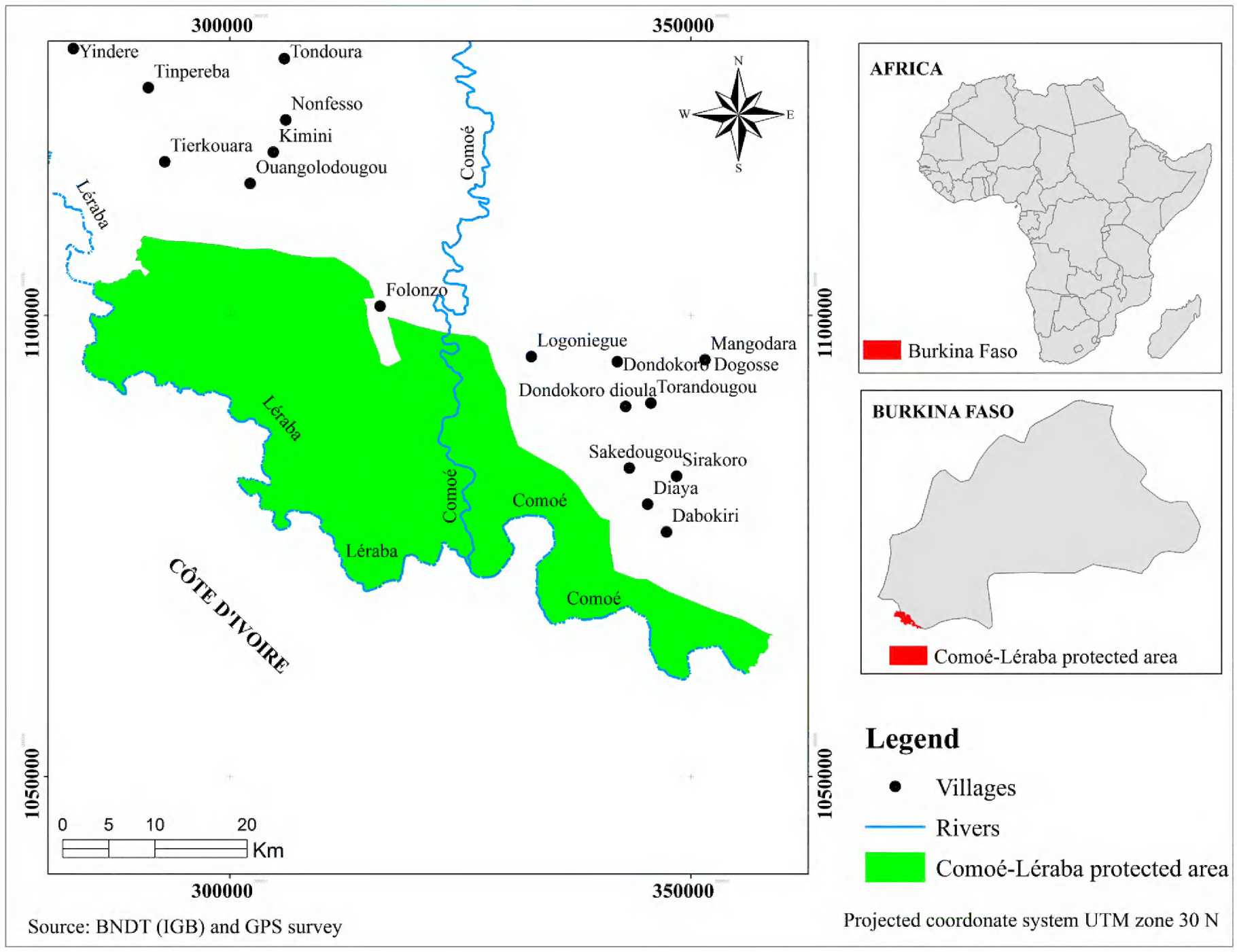

Figure 1. Map of the classified forest and partial faunal reserve of Comoé-Léraba and its surroundings, Burkina Faso.

Species were identified using Berhaut (1971-1988); Le Bourgeois and Merlier (1995); Akbundu and Agyakwa (1989); Arbonnier (2002); Hutchinson and Dalziel (1954–1972); Hawthorne and Jongkind (2006), Akoègninou *et al.* (2006); Poilecot (1995, 1999) and the West African Plants Database (http://www.westafricanplants.senckenberg.de; Bruken *et al.* 2008).

Data analysis

The family concept follows Thiombiano *et al.* (2012), therefore Fabaceae and Malvaceae have been considered in a wider sense (with Caesalpinoideae and Mimosoideae as subfamilies of Fabaceae and Bombacoideae, Grewioideae, Sterculioideae as subfamilies of Malvaceae), which is now generally accepted (*e.g.*, APG III, 2009) but may differ from previous analyses from West Africa. Life forms follow Raunkiaer (1934) and have been assembled from literature (Mbayngone *et al.* 2008; Ouédraogo *et al.* 2011; Thiombiano *et al.* 2012). The chorological types refer to the phytochoria of White (1983), widely used in West African studies (Sinsin 2001; Mbayngone *et al.* 2008), and distributional information from the Global Biodiversity Information Facility (http://www.gbif.org/species). To determine floristic similarity with other protected areas, Sørensen indices were calculated using the Community Analysis Package (CAP 2002).

RESULTS

A total of 540 species was recorded in the Comoé-Léraba reserve belonging to 343 genera and 91 families (Appendix 1). In the study area, the pteridophytes constitute 1.11% of the species and the spermaphytes 98.89%. The whole of the spermaphytes, only the angiosperms are present (monocotyledons 24.77% and dicotyledons 74.12%) and the gymnosperms are missed. The richest dominant families are Fabaceae (89 species), followed by Poaceae (51), Rubiaceae (33), Cyperaceae (25), Malvaceae (23) Apocynaceae (19), Euphorbiaceae (19), Acanthaceae (18), Asteraceae (18) and Combretaceae (14) (Figure 2). Seven types of life form were found in Comoé-Léraba reserve, with a dominance of phanerophytes (45.12%), followed by therophytes (32.97%), geophytes (9.02%), hemicryptophytes (7.55%), chamaephytes (4.24%), epiphytes (0.37%) and hydrophytes (0.18%). Regarding the chorological spectrum of the flora (Figure 3), 13 elements are determined.

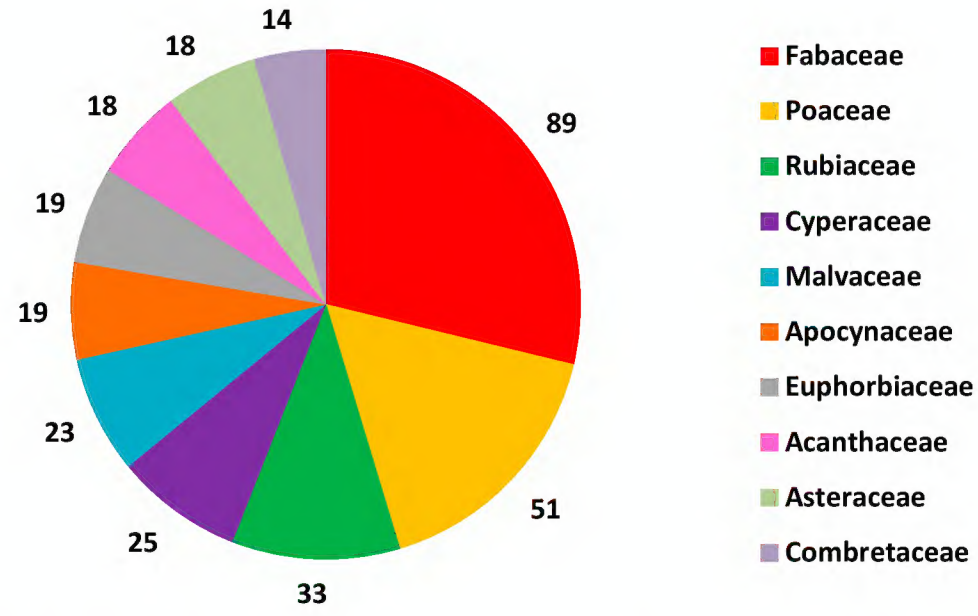

Figure 2. Family composition; showing the number of species in ten dominant families.

The most important are Sudanian (136); Guineo–Congolian (113); Pluriregional African (71); Paleotropical (54); Pantropical (54); Afrotropical (43) and Sudano–Zambezian (42).

DISCUSSION

The flora of Comoé-Léraba reserve represents 26.12% of the vascular plants of Burkina Faso (Thiombiano *et al.* 2012). The five most important families are similar to those of Pama reserve (Mbayngone *et al.* 2008). The family composition is also close to the flora of Arly National Park, but we found more species of Combretaceae.

Family diversity is higher (91 families) in the Comoé-Léraba reserve compared to Arly National Park (83) and the Partial faunal reserve of Pama (73). Fabaceae and Poaceae are the most dominant families in the protected areas in the North and South Sudanian sector (Schmidt *et al.* 2005; Schmidt *et al.* 2010) with typical savanna vegetation. With increasing water availability, gallery forests and dense dry forests become more important landscape elements. This explains the high availability of Rubiaceae members in Comoé-Léraba and Pendjari located in the more humid areas (Sambaré *et al.* 2010; N'Da *et al.* 2008, Bakayoko *et al.* 2004; Ake Assi, 2002).

The life form pattern found in Comoé-Léraba reserve, with a dominance of phanerophytes and therophytes, is in accordance with other studies from the North Sudanian (Ouédraogo *et al.* 2011) and South Sudanian phytogeographical sectors (Assédé *et al.* 2012). The dominance of phanerophytes in this study is due to the presence of different forest types. These results are similar to South Sudanian Zone (Thiombiano *et al.* 2012).

The chorological spectrum of the flora is characterized by a high proportion of Sudanian species (25.19%). However, the number of Guineo–Congolian species is also very important in the reserve (20.93%). These elements are found in each vegetation type of the reserve as opposed to Arly National Park where they are mainly confined to the gallery forests (Ouédraogo *et al.* 2011). This study confirms the phytogeographic placement of Comoé-Léraba in the Sudano-Guinean transition zone as shown by the presence of open forest of *Isoberlinia* (Adjanohoun *et al.* 1989) and the presence of *Monotes* and *Uapaca*. Within the chorological spectrum a high proportion of widespread species has been documented (Pluriregional African, Paleotropical, Pantropical, Sudano-Zambezian a ndAfrotropical). *Chromolaena odorata,* a neophyte from the Americas, has been identified. In West Africa, *C. odorata* shows the limit between denser rain forest and Guinean savanna (Akbundu and Agyakwa 1989). In other areas of the world, it is considered as an aggressive invader (US Forest Service 2014).

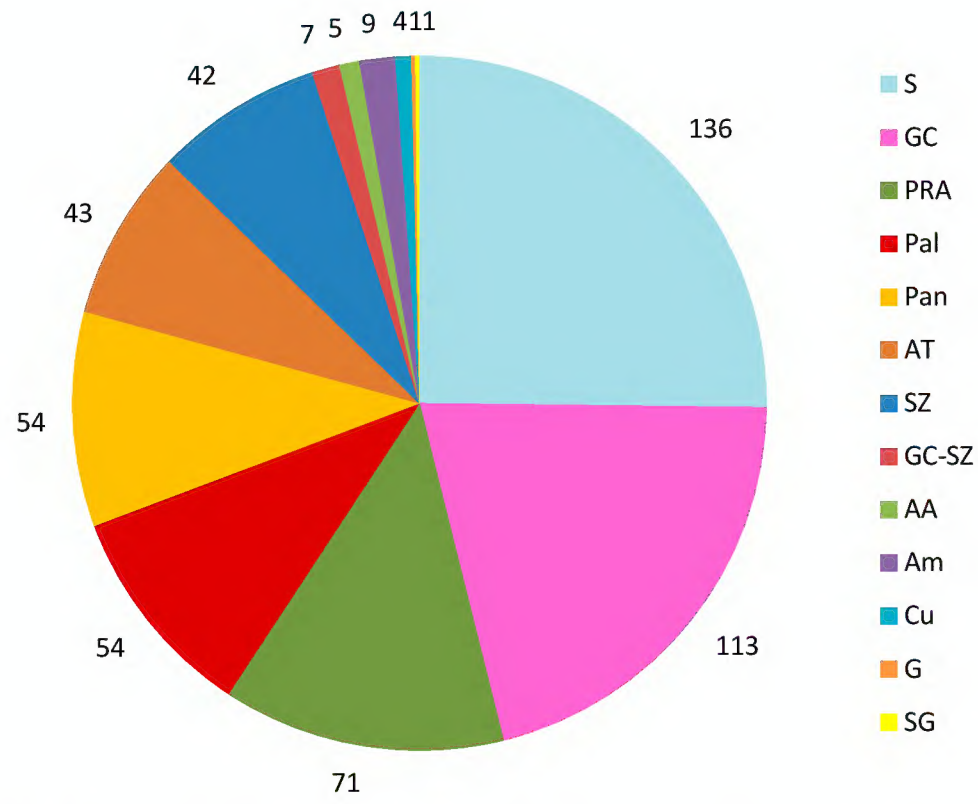

Figure 3. Chorological spectrum of the flora of Comoé-Léraba reserve, Burkina Faso. S= Sudanian; GC= Guinean-Congolian; PRA= Pluriregional African; Pal= Paleotropical; Pan = Pantropical; AT = Afrotropical, SZ= Sudano-zambesian; GC-SZ=Guinean-Congolian; Sudano-Zambesian; AA= Afro-American; Am = Afro-Malagasy; Cu= Cultivated; G= Guinean.

The comparison of protected areas of Burkina Faso and Benin includes four neighbouring areas. W-Burkina Faso (Nacoulma *et al.* 2011), Arly (Ouédraogo *et al.* 2011), Pama (Mbayngone *et al.* 2008) are geographically grouped together with the biosphere reserve of Pendjari in Benin in the so-called WAPO complex (W-Arly-Pendjari-Oti). Two other protected areas have been considered: Bangr-Weoogo urban park (Gnoumou *et al.* 2008), in the central part of the country, and the classified forest of Kou (Guinko and Thiombiano 2005), in southwest Burkina Faso. The last one is the country's largest protected area located in its northernmost corner - the Sahel reserve (Schmidt *et al.* 2008).

The highest floristic similarity was found between W-Burkina Faso and Arly national parks (Table 1) and also these protected areas are also similar to Pama and Pendjari in species composition.

Moreover, W-Burkina Faso, situated in the North Sudanian sector has a flora most similar to the Comoé-Léraba reserve. This is probably due to the similarity of more ecosystems, such as (1) groves on termite's mounds, (2) woodland savannah on flood plains, in high, middle and lower glacis, (3) gallery forest on river beds, (4) forest in middle glacis and high glacis, which is quite opposite to Kou reserve which is geographically closer to Comoé-Léraba. The W-Burkina Faso has high

Table 1. Comparison of the protected areas: Sørensen index

Protected area	Comoé-Léraba	Arly	Kou	Pama	Pendjari	PUBW	Sahel	W-Burkina
Comoé-Léraba								
Arly	0.49							
Kou	0.46	0.43						
Pama	0.47	**0.66**	0.44					
Pendjari	0.43	**0.55**	0.36	**0.50**				
PUBW	0.33	0.47	0.35	0.43	0.38			
Sahel	0.33	0.37	0.15	0.34	0.29	0.30		
W-Burkina	**0.52**	**0.70**	0.42	**0.66**	**0.58**	0.43	0.37	

Table 2. Comparison of the protected areas: common species, exlusive species and species richness.

Protected area	Common Species							Exclusive	Richness
	Comoé-Léraba	Arly	Kou	Pama	Pendjari	PUBW	Sahel		
Comoé-Léraba								118	521
Arly	216							34	490
Kou	204	197						25	275
Pama	203	298	211					34	450
Pendjari	252	323	233	282				180	684
PUBW	151	180	173	164	189			59	327
Sahel	88	155	115	227	147	167		109	345
W-Burkina	403	388	270	297	474	290	198	60	615

species richness with few exclusive species in comparison to the other protected areas. However, low dissimilarity exists between Comoé-Léraba reserve and the other transboundary protected areas further east. The environmental differences and larger distance to the other reserves make the Bangr-Weoogo urban park and the Sahel reserve the most distinctive in species composition. Comoé-Léraba accounts the highest number of exclusive species followed by the reserve of Sahel in the country (Table 2). Exclusive species bring out their value in flora conservation.

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Authors' contribution statement: AT developed the idea of this study; AG collected, analysed data and wrote the text; OO and MS identified the species, contributed inventory data from other reserves, and improved the manuscript.

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Appendix 1. Higher plants of the classified forest and partial faunal reserve of Comoé-Léraba. The table follows the presentation of the families in alphabetical order and for each family the species are also in alphabetical order. Life form, chorological information and voucher specimens are provided for each species (life forms: [c] chamaephyte, [g] geophyte, [hc] hemicryptophyte, [hy] hydrophyte, [p] phanerophyte, [t] therophyte; [ep] epiphyte; chorology: [S] sudanian, [Pan] pantropical, [SZ] Sudano-Zambesian, [Pal] Paleotropical, [AT] Afrotropical, [PRA] pluriregional African, [GC] Guineo-Congolian, [AA] Afro-American, [Am] Afro-Malagasy, [G] Guinean, [Cu] cultivated, cosmopolitan, [GC-SZ] Guineo-Congolian-Sudano-Zambesian.

Family and species	Lf	Chor.	Voucher specimen number
PTERIDOPHYTA			
Adiantaceae			
Adiantum philipense L.	hc	SZ	A. Gnoumou 16431
Doryopteris kirkii (Hook.) Alston	t	AT	
Marsileaceae			
Marsilea quadrifolia L.	t		
Ophioglossaceae			
Ophioglossum reticulatum L.	g	Sz	A. Gnoumou 16459
Parkeriaceae			
Ceratopteris cornuta (P.Beauv.) Lepr.	t	SZ	A. Gnoumou 16589
Selaginellaceae			
Selaginella protensa Alston	t	GC-SZ	A. Gnoumou 16600
SPERMATOPHYTA			
Angiospermae			
Monocotyledonae			
Alismataceae			
Burnatia enneandra Micheli	t	PRA	A. Gnoumou 16653, Aké Assi et al 4064, 4065
Butomopsis latifolia (D.Don) Kunth	t	Pan	
Limnophyton obtusifolium (L.) Miq.	g	Pal	
Aloaceae			
Aloe buettneri A.Berger	g	S	
Amaryllidaceae			
Pancratium tenuifolium Hochst. ex A.Rich.	g	GC-SZ	
Anthericaceae			
Chlorophytum laxum R. Br.	g	S	A. Gnoumou 16478

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Chlorophytum limosum (Baker) Nordal	hc	S	A. Gnoumou 16544
Chlorophytum senegalense (Baker) Hepper	g	S	A. Gnoumou 16517
Chlorophytum stenopetalum Baker	g	SZ	A. Gnoumou 16546
Chlorophytum lancifolium Baker	g	GC	A. Gnoumou 16526
Araceae			
Amorphophallus abyssinicus (A.Rich.) N.E.Br.	g	S	
Amorphophallus aphyllus (Hook.) Hutch.	g	S	A. Gnoumou 16616
Anchomanes difformis (Blume) Engl.	g	GC	
Caladium bicolor (Ait.) Vent. var. pictum	g	AA	A. Gnoumou 13636
Stylochaeton hypogaeus Lepr.	g	GC	A. Gnoumou 16488, 16621
Arecaceae			
Elaeis guineensis Jacq.	p	Cu	
Raphia sudanica A.Chev.	p	S	
Asparagaceae			
Asparagus africanus Lam.	c	S	
Drimia altissima (L. f.) Ker-Gawl.	hc	AT	A. Gnoumou 16557
Sansevieria liberica Gérôme & Labroy	g	GC	A. Gnoumou 16524, 16591
Colchicaceae			
Gloriosa superba L.	g	Pal	A. Gnoumou 16433
Commelinaceae			
Aneilema lanceolatum Benth.	t	S	
Aneilema paludosum A. Chev.	t	GC	A. Gnoumou 16424
Commelina africana L.	t	PRA	
Commelina benghalensis L.	t	Pal	
Commelina erecta L.	t	Pan	A. Gnoumou 16495
Commelina nigritana Benth.	t	GC	A. Gnoumou 16581
Commelina subulata Roth	t	Pal	
Floscopa axillaris (Poir.) C.B.Clarke	t	GC	A. Gnoumou 16444
Murdannia simplex (Vahl) Brenan	g	Pal	A. Gnoumou 16601
Costaceae			
Costus spectabilis (Fenzl) K.Schum.	g	SZ	
Cyperaceae			
Bulbostylis abortiva (Steud.) C.B.Clarke	t	PRA	
Bulbostylis coleotricha (Hochst. ex A.Rich.) C.B.Clarke	t	PRA	
Bulbostylis filamentosa (Vahl) C.B.Clarke	hc	SZ	A. Gnoumou 16567, 16456
Bulbostylis hispidula (Vahl) R.W.Haines subsp. *brachyphylla* (Cherm.) Napper	t	PRA	A. Gnoumou 16563
Bulbostylis scabricaulis Cherm.	t	PRA	A. Gnoumou 16566
Cyperus amabilis Vahl	t	Pan	A. Gnoumou 16643
Cyperus cuspidatus Kunth	t	Pan	A. Gnoumou 16421
Cyperus difformis L.	t	Pan	A. Gnoumou 16559
Cyperus haspan L.	hc	Pan	A. Gnoumou 16647
Cyperus laxus Lam. *subsp. buchholzii* (Boeckeler) Kük.	t	GC	A. Gnoumou 16611, 16614
Cyperus margaritaceus Vahl	t	PRA	A. Gnoumou 16467
Cyperus tenuiculmis Boeckeler	g	Pal	A. Gnoumou 16454
Eleocharis complanata Boeckeler	t	PRA	A. Gnoumou 32, 13641
Eleocharis mutata (L.) Roem. & Schult.	t	GC	A. Gnoumou 31, 13640
Fimbristylis ferruginea (L.) Vahl	t	Pan	A. Gnoumou 16646
Fuirena ciliaris (L.) Roxb.	t	Pal	A. Gnoumou 16641
Fuirena umbellata Rottb.	g	Pan	A. Gnoumou 16423
Kyllinga tenuifolia Steud.	hc	Pal	A. Gnoumou 16450
Mariscus cylindristachyus Steud.	hc	Pan	A. Gnoumou 16572
Pycreus flavescens (L.) Reichenb.	t	Pan	
Rhynchospora corymbosa (L.) Britton	hc	Pan	
Schoenoplectiella senegalensis (Hochst. ex Steud.) Lye	hc	Pal	A. Gnoumou 16656, 16672
Scleria naumanniana Boeckeler	g	GC	A. Gnoumou 16283, 16550; Aké Assi *et al.* 4093
Scleria sphaerocarpa (E.A.Rob.) Napper	g	S	
Scleria tessellata Willd.	t	Pal	A. Gnoumou 16570
Dioscoreaceae			
Dioscorea bulbifera L.	g	Pan	A. Gnoumou 16266
Dioscorea dumetorum (Kunth) Pax	g	GC	A. Gnoumou 16530

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Dioscorea hirtiflora Benth.	g	GC	
Dioscorea sagittifolia Pax	g	S	
Eriocaulaceae			
Eriocaulon inundatum Moldenke	t	GC	A. Gnoumou 16511
Eriocaulon meiklei Moldenke	t	S	A. Gnoumou 16659
Eriocaulon togoense Moldenke	t	S	A. Gnoumou 16541
Hydrocharitaceae			
Ottelia ulvifolia Pers.	Hy	PRA	
Hypoxidaceae			
Curculigo pilosa (Schum. & Thonn.). *var. minor* Engler	g	PRA	
Iridaceae			
Gladiolus gregarius Welw. ex Baker	g	AT	A. Gnoumou 16501
Marantaceae			
Thalia geniculata L.	g	PRA	
Nympheaceae			
Nymphaea lotus L.	g	Pal	
Nymphaea maculata Schumach. & Thonn.	g	GC	A. Gnoumou 16652
Nymphaea micrantha Guill. & Perr.	g	GC	A. Gnoumou 16654, 16671
Orchidaceae			
Calyptrochilum christyanum (Rchb.f.) Summerh.	ep	S	A. Gnoumou 16437
Eulophia cucullata (Afz.) Lindl.ex Steud.	hc	S	
Liparis nervosa (Thunb.) Lindl.	g	Pan	
Malaxis chevalieri Summerh.	g	GC	A. Gnoumou 16606
Nervilia petraea (Afzel.ex. Sw.) Summerh	g	Am	A. Gnoumou 16580
Nervilia kotschyi (Rchb.f.) Schltr.	g	Am	
Nervilia simplex (Thouars) Schltr.	g	Am	A. Gnoumou 16607
Nervilia bicarinata (Blume) Schltr.	g	Am	A. Gnoumou 16461, 16520
Poaceae			
Acroceras zizanioides (Kunth) Dandy	hc	Pan	A. Gnoumou 16604
Andropogon gayanus Kunth	hc	AT	A. Gnoumou 16547
Andropogon schirensis A.Rich.	hc	PRA	A. Gnoumou 16463
Aristida kerstingii Pilg.	t	GC	A. Gnoumou 16497
Brachiaria serrata (Thunb.) Stapf	hc	SZ	A. Gnoumou 16622
Chasmopodium caudatum (Hack.) Stapf	t	GC	A. Gnoumou 16531
Chloris robusta Stapf	t	S	
Chrysopogon nigritanus (Benth.) Veldkamp	hc	PRA	
Ctenium elegans Kunth	t	AT	A. Gnoumou 16551
Ctenium newtonii Hack.	hc	S	
Cymbopogon caesius (Nees ex Hook. & Arn.) Stapf	hc	PRA	A. Gnoumou 16617
Digitaria diagonalis (Nees) Stapf var. *hirsuta* (De Wild. & Th. Dur.) Troupin	hc	PRA	A. Gnoumou 16583, 16594
Digitaria horizontalis Willd.	t	GC	
Elionurus elegans Kunth	t	SZ	A. Gnoumou 16464
Elionurus royleanus Nees ex A. Rich.	t	AT	
Elymandra androphila (Stapf) Stapf	hc	S	A. Gnoumou 16472
Elytrophorus spicatus (Willd.) A.Camus	t	Pal	A. Gnoumou 16655, 16662
Euclasta condylotricha (Hochst. ex Steud.) Stapf	t	Aam	A. Gnoumou 16272
Hyparrhenia glabriuscula (Hochst. ex A.Rich.) Anderss. ex Stapf	hc	S	A. Gnoumou 16523
Hyparrhenia involucrata Stapf	t	S	A. Gnoumou 16484
Hyparrhenia smithiana (Hook. f.) Stapf	hc	S	A. Gnoumou 16451, 16457
Loudetia simplex (Nees) C.E.Hubb.	hc	PRA	A. Gnoumou 16458
Loudetiopsis kerstingii (Pilg.) Conert	t	S	A. Gnoumou 16457, 16483
Microchloa indica (L.f.) P.Beauv.	t	Pan	A. Gnoumou 16494
Monocymbium ceresiiforme (Nees) Stapf	hc	S	A. Gnoumou 16489, 16502
Oplismenus hirtellus (L.) P.Beauv.	c	GC	A. Gnoumou 16514
Oryza barthii A.Chev.	t	AT	A. Gnoumou 16639
Oryza longistaminata A.Chev. & Roehr.	hc	PRA	
Oxytenanthera abyssinica (A.Rich.) Munro	hc	AT	
Panicum fluviicola Steud.	hc	PRA	A. Gnoumou 16491, 16540, 16592
Panicum phragmitoides Stapf	hc	GC	A. Gnoumou 16595
Paspalum scrobiculatum L.	hc	Pal	A. Gnoumou 16439, 16640
Pennisetum pedicellatum Trin.	t	Pal	
Pennisetum polystachion (L.) Schult.	t	GC-SZ	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Pennisetum unisetum (Nees) Benth	hc	SZ	A. Gnoumou 16496
Rottboellia cochinchinensis (Lour.) Clayton	t	Pal	A. Gnoumou 16426
Sacciolepis africana C.E.Hubb. & Snowden	g	GC	A. Gnoumou 16663
Sacciolepis chevalieri Stapf	hc	S	A. Gnoumou 16668
Sacciolepis indica (L.) Chase	t	Pal	
Sacciolepis micrococca Mez	t	S	A. Gnoumou 16669
Schizachyrium exile (Hochst.) Pilg.	t	Am	
Schizachyrium brevifolium (Sw.) Nees ex Büse			
Schizachyrium platyphyllum (Franch.) Stapf	hc	S	A. Gnoumou 16442, 16573, 16648
Schizachyrium sanguineum (Retz.) Alston	hc	Pan	
Schizachyrium schweinfurthii (Hack.) Stapf	hc	S	A. Gnoumou 16590
Sorghastrum bipennatum (Hack.) Pilg.	t	PRA	
Sporobolus festivus Hochst. ex A.Rich.	hc	PRA	
Sporobolus pyramidalis P.Beauv.	hc	PRA	
Sporobolus virginicus (L.) Kunth	g	GC	A. Gnoumou 16665
Urelytrum annuum Stapf	t	S	A. Gnoumou 16503
Urelytrum muricatum C.E.Hubb.	hc	S	
Pontederiaceae			
Eichhornia natans (P.Beauv.) Solms	t	AA	A. Gnoumou 16657
Smilacaceae			
Smilax anceps Willd.	p	PRA	
Taccaceae			
Tacca leontopetaloides (L.) Kuntze	g	Pal	
Zingiberaceae			
Aframomum sceptrum (Oliv. & Haub.) K.Schum. (Figure 5)	g	GC	A. Gnoumou 13620
Siphonochilus aethiopicus (Schweinf.) B.L.Burtt	g	S	
Angiospermae			
Dicotyledoneae			
Acanthaceae			
Asystasia gangetica (L.) T. Anders.	t	Pal	A. Gnoumou 16575
Barleria ruellioides T. Anders.	t	S	
Blepharis maderaspatensis (L.) Heyne ex Roth	t	Pal	
Dicliptera paniculata (Forssk.) I.Darbysh.	t	PRA	A. Gnoumou 16578
Dyschoriste nagchana (Nees) Bennet	t	AT	
Elytraria marginata Vahl	t	GC	A. Gnoumou 28, 13637
Hypoestes aristata (Vahl) Sol. ex Roem. & Schult.	t	PRA	A. Gnoumou 16321
Justicia ladanoides Lam.	t	AT	
Justicia tenella (Nees) T. Anders.	t	PRA	A. Gnoumou 16441
Lepidagathis alopecuroides (Vahl) R. Br. ex Griseb.	t	Pan	
Lepidagathis anobrya Nees	c	S	A. Gnoumou 16434
Lepidagathis collina (Endl.) Milne-Redhead	t	S	A. Gnoumou 16618, 16619, 16620
Monechma ciliatum (Jacq.) Milne-Redhead	c	PRA	A. Gnoumou 16436, 1646
Monechma depauperatum (T. Anders.) C.B. Clarke	t	S	
Nelsonia canescens (Lam.) Spreng.	t	Pan	A. Gnoumou 16598
Phaulopsis barteri (T. Anders.) Lindau	t	AA	A. Gnoumou 16576, 16577
Phaulopsis ciliata (Willd.) Hepper	t	AT	
Ruellia praetermissa Schweinf. ex Lindau	t	S	A. Gnoumou 16449
Amaranthaceae			
Achyranthes aspera L.	t	Pan	
Cyathula achyranthoides (Kunth) Moq.	t	GC	A. Gnoumou 16281
Cyathula prostrata (L.) Blume	t	GC	
Gomphrena globosa L.	t	Pan	A. Gnoumou 16493
Pandiaka angustifolia (Vahl) Hepper	t	S	A. Gnoumou 16462
Anacardiaceae			
Lannea acida A. Rich.	p	S	
Lannea barteri (Oliv.) Engl.	p	S	
Lannea microcarpa Engl. & K.Krause	p	SZ	
Annonaceae			
Annona senegalensis Pers.	p	S	
Hexalobus monopetalus (A. Rich.) Engl. & Diels	p	S	
Uvaria chamae P.Beauv.	p	PRA	A. Gnoumou 16318,
Uvariopsis guineensis Keay	p	GC	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Uvariopsis tripetala (Baker f.) G.E.Schatz	p	GC	A. Gnoumou 16417
Xylopia acutiflora (Dunal) A.Rich.	p	GC	A. Gnoumou 16365
Apocynaceae			
Alafia scandens (Thonn.) De Wild.	p	GC	A. Gnoumou 14, 13623
Baissea multiflora A. DC.	p	SZ	A. Gnoumou 16256
Carissa edulis (Forssk.) Vahl (Figure 9)	p	Pal	A. Gnoumou 16326
Cryptolepis oblongifolia (Meisn.) Schltr.	c	PRA	A. Gnoumou 16508
Cryptolepis sanguinolenta (Lindl.) Schltr.	p	GC	A. Gnoumou 16419
Cryptostegia grandiflora R.Br. ex Lindl.	p	GC	A. Gnoumou 16471
Gymnema sylvestre (Retz.) Schultes	p	Pal	
Holarrhena floribunda (G.Don) T.Durand & Schinz	p	GC	A. Gnoumou 16352, 16390
Landolphia dulcis (Sabine) Pichon	p	GC	A. Gnoumou 16397
Landolphia hirsuta (Hua) Pichon	p	GC	A. Gnoumou 13626
Leptadenia hastata (Pers.) Decne.	p	PRA	A. Gnoumou 16377
Oxystelma bornouense R.Br.	p	GC	
Pentatropis nivalis (J.F.Gmel.) D.V.Field & J.R.I.Wood	p	Pal	A. Gnoumou 16295, 16296
Saba comorensis (Bojer ex A.D.C.) Pichon	p	PRA	A. Gnoumou 16310
Saba senegalensis (A.DC.) Pichon	p	S	
Secamone afzelii (Schultes) K.Schum.	p	GC	A. Gnoumou 16260, 16316, 16361
Strophanthus sarmentosus DC.	p	GC	
Tacazzea apiculata Oliv.	p	AT	
Telosma africana (N.E.Br.) N.E.Br.	p	PRA	A. Gnoumou 16273, 16288
Araliaceae			
Cussonia arborea Hochst. ex A. Rich.	p	SZ	
Asteraceae			
Aspilia bussei O. Hoffm. & Muschl.	t	S	A. Gnoumou 16446
Aspilia helianthoides (Schum. & Thonn.) Oliv. & Hiern	t	PRA	
Aspilia paludosa Berhaut	t	S	
Aspilia rudis Oliv. & Hiern	t	S	
Bidens engleri O.E.Schulz	t	S	
Blumea crispata (Vahl) Merxm.	t	GC-SZ	
Centaurea praecox Oliv. & Hiern	g	AT	A. Gnoumou 16455
Chromolaena odorata (L.) R. King & H. Robinson	c	Pan	
Echinops longifolius A.Rich.	t	S	A. Gnoumou 16453
Elephantopus mollis Kunth	t	Pan	A. Gnoumou 16586
Lactuca inermis Forssk.	hc	PRA	A. Gnoumou 16479, 16556
Linzia nigritiana (Oliv. & Hiern) Isawumi	c	S	A. Gnoumou 16466
Litogyne gariepina (DC.) Anderb.	t	AT	A. Gnoumou 16542
Macledium sessiliflorum (Harv.) S.Ortiz	hc	S	A. Gnoumou 16612
Melanthera elliptica O.Hoffm.	hc	S	A. Gnoumou 16473
Pseudoconyza viscosa (Mill.) D'Arcy	t	PRA	
Vernonia colorata (Willd.) Drake	p	SZ	
Vernonia guineensis Benth.	t	PRA	A. Gnoumou 16560
Balanophoraceae			
Thonningia sanguinea Vahl (Figure 10)	g	GC	
Bignoniaceae			
Kigelia africana (Lam.) Benth.	p	GC	A. Gnoumou 16320, 16334
Stereospermum kunthianum Cham.	p	SZ	
Bixaceae			
Cochlospermum tinctorium Perr. ex A.Rich.	g	S	
Boraginaceae			
Cordia myxa L.	p	Pal	
Rotula aquatica Lour.	p	Pan	A. Gnoumou 16351
Campanulaceae			
Wahlenbergia hirsuta (Edgew.) Tuyn	t	AT	A. Gnoumou 16574
Capparaceae			
Cadaba farinosa Forssk.	p	Pal	A. Gnoumou 13276, 13277
Capparis polymorpha A. Rich.	p	GC	A. Gnoumou 16396
Capparis sepiaria L.	p	SZ	
Capparis tomentosa Lam.	p	S	A. Gnoumou 16276, 16393
Crateva adansonii DC.	p	Pal	A. Gnoumou 16383
Maerua angolensis DC.	p	AT	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Ritchiea capparoides (Andrews) Britten	p	GC	A. Gnoumou 16382, 16387
Celastraceae			
Apodostigma pallens (Planch. & Oliv.) Wilczek var. pallens	p	GC	A. Gnoumou 16287,16305
Gymnosporia senegalensis (Lam.) Loes.	p	SZ	
Loeseneriella africana (Willd.) Wilczeck ex Hallé	p	AT	A. Gnoumou 16269
Salacia pallescens Oliv.	p	GC	A. Gnoumou 16331,16332, 16344, 16346
Salacia stuhlmanniana Loes.	p	GC	A. Gnoumou 13282, 16253, 16277
Simicratea welwitschii (Oliv.) N. Hallé	p	GC	A. Gnoumou 16399
Chrysobalanaceae			
Maranthes polyandra (Benth.) Prance	p	S	A. Gnoumou 16355
Parinari congensis Didr.	p	GC	A. Gnoumou 16341, 16359
Parinari curatellifolia Planch. ex Benth.	p	SZ	A. Gnoumou 16324
Combretaceae			
Anogeissus leiocarpa Guill. & Perr.	p	SZ	
Combretum adenogonium Steud. Ex. A.Rich.	p	S	
Combretum collinum Fresen.	p	AT	
Combretum molle R. Br. ex G. Don	p	AT	
Combretum nigricans Lepr. ex Guill. & Perr.	p	S	A. Gnoumou 16407
Combretum paniculatum Vent.	p	PRA	
Combretum racemosum P. Beauv.	p	GC	
Combretum sericeum G. Don	p	S	A. Gnoumou 16349
Combretum tarquense Clark	p	GC	
Pteleopsis suberosa Engl. & Diels	p	PRA	
Terminalia glaucescens Planch. ex Benth.	p	SZ	A. Gnoumou 16286, 16372
Terminalia laxiflora Engl. & Diels	p	S	
Terminalia macroptera Guill. & Perr.	p	S	
Terminalia mollis M. A. Lawson	p	PRA	A. Gnoumou 16354
Convolvulaceae			
Evolvulus nummularius (L.) L.	t	Pan	A. Gnoumou 16474
Ipomoea argentaurata Hallier f.	t	GC	
Ipomoea cairica (L.) Sweet	t	Pan	A. Gnoumou 13625
Ipomoea hederifolia L.	t	GC	A. Gnoumou 16509
Ipomoea marginata (Desr.) Verdc.	p	Pal	A. Gnoumou 16602
Ipomoea mauritiana Jacq.	t	Pan	Aké Assi *et al.* 4091
Merremia hederacea (Burm.f.) Hallier f.	p	GC	A. Gnoumou
Cucurbitaceae			
Momordica charantia L.	p	Pan	
Cucumis maderaspatanus L.	t	Pal	A. Gnoumou 16537
Dilleniaceae			
Tetracera potatoria Afzel. ex G.Don	p	GC	A. Gnoumou 13629
Dipterocarpaceae			
Monotes kerstingii Gilg	p	S	
Ebenaceae			
Diospyros abyssinica (Hiern) F.White	p	GC	A. Gnoumou 16335
Diospyros heudelotii Hiern	p	GC	
Diospyros mespiliformis Hochst. ex A. DC.	p	Pal	
Euphorbiaceae			
Antidesma rufescens Tul.	p	PRA	A. Gnoumou 16284
Antidesma venosum E.Mey. ex Tul.	p	PRA	
Caperonia serrata (Turcz.) C.Presl	t	S	A. Gnoumou 16538, 16649
Croton nigritanus Scott-Elliot	p	GC	A. Gnoumou 16413, 16416
Croton scarciesii Scott- Elliot	p	GC	A. Gnoumou 16409
Euphorbia convolvuloides Hochst. ex Benth.	c	S	
Excoecaria grahamii Stapf	c	SZ	
Mallotus oppositifolia (Geiseler) Müll. Arg.	p	PRA	A. Gnoumou 16343, 16345
Tragia laminularis Müll. Arg.	hc	S	A. Gnoumou 16626
Tragia volubilis L.	hc	AT	A. Gnoumou 13628
Fabaceae			
Fabaceae-Caesalpinoideae			
Afzelia africana Sm. ex Pers.	p	SZ	
Berlinia grandifolia (Vahl) Hutch. & Dalz. (Figure 12)	p	GC	A. Gnoumou 13278, 13279
Burkea africana Hook.	p	AT	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Cassia absus L.	c	Pal	A. Gnoumou 16443
Cassia podocarpa Guill. & Perr.	p	GC	
Cassia sieberiana DC.	p	SZ	A. Gnoumou 16264
Daniellia oliveri (Rolfe) Hutch. & Dalziel	p	SZ	
Detarium microcarpum Guill. & Perr.	p	S	
Dialium guineense Willd.	p	GC	A. Gnoumou 16279, 16411
Erythrophleum africanum (Welw. ex Benth.) Harms	p	PRA	
Erythrophleum suaveolens (Guill. & Perr.) Brenan	p	PRA	A. Gnoumou 16408
Guibourtia copallifera Benn. (Figure 7)	p	S	Thiombiano *et al.* 3348
Isoberlinia doka Craib & Stapf (Figure 14)	p	S	
Isoberlinia tomentosa (Harms) Craib & Stapf	p	S	
Mezoneuron benthamianum Baill.	p	GC	A. Gnoumou 13622
Piliostigma reticulatum (DC.) Hochst.	p	S	
Piliostigma thonningii (Schumach.) Milne-Redh.	p	AT	
Tamarindus indica L.	p	Pan	
Fabaceae-Faboideae			
Abrus canescens Welw. ex Baker (Figure 11)	p	GC	A. Gnoumou 13635
Abrus melanospermus Hassk.	p	Pan	
Abrus precatorius L.	p	Pan	A. Gnoumou 16340
Abrus pulchellus Wall	p	AT	
Aeschynomene afraspera J. Léonard	c	S	A. Gnoumou 16510
Alysicarpus glumaceus (Vahl) DC.	t	PRA	A. Gnoumou 16469, 16525, 16569
Andira inermis (Wright) DC.	p	S	
Bakerophyton lateritium (Harms) Hutch. ex Maheshw.	c	S	A. Gnoumou 16554
Calopogonium mucunoides Desv.	p	GC	A. Gnoumou 16627
Centrosema pubescens Benth.	t	Pan	
Crotalaria calycina Schrank	t	Pal	A. Gnoumou 16587
Crotalaria goreensis Guill. & Perr.	t	PRA	A. Gnoumou 16553
Crotalaria hyssopifolia Klotzsch	t	S	A. Gnoumou 16628
Crotalaria microcarpa Hochst. ex Benth.	t	S	A. Gnoumou 16485
Crotalaria vogelii Benth.	t	AT	
Dalbergia hostilis Benth.	p	GC	A. Gnoumou 16420
Dalbergia saxatilis Hook. f.	p	GC	
Desmodium barbatum (L.) Benth.	t	PRA	A. Gnoumou 16558
Desmodium gangeticum (L.) DC.	c	Pal	A. Gnoumou 16532
Desmodium linearifolium G. Don	t	GC	A. Gnoumou 13632
Desmodium velutinum (Willd.) DC.	c	Pal	A. Gnoumou 16529
Eriosema griseum Baker	t	GC	A. Gnoumou 16422
Eriosema psoraleoides (Lam.) G.Don	t	PRA	A. Gnoumou 16539
Erithryna senegalensis A.DC.	p	SZ-GC	
Flemingia faginea (Guill. & Perr.) Baker	p	S	
Indigofera bracteolata DC.	t	S	A. Gnoumou 16487
Indigofera dendroides Jacq.	t	PRA	A. Gnoumou 16465
Indigofera kerstingii Harms	t	S	A. Gnoumou 16555
Indigofera macrocalyx Guill. & Perr.	t	S	
Indigofera macrophylla Schum.	p	GC	
Indigofera microcarpa Desv.	t	Pan	
Indigofera paniculata Vahl ex Pers.	t	S	A. Gnoumou 16299
Indigofera simplicifolia Lam.	t	SZ	A. Gnoumou 16302
Indigofera stenophylla G. et Perr.	t	S	A. Gnoumou 16477
Indigofera tetrasperma Vahl ex Pers.	t	GC	A. Gnoumou 16482
Macrotyloma biflorum (Schumach. & Thonn.) Hepper	p	S	A. Gnoumou 16301
Pericopsis laxiflora (Benth.) Meeuwen	p	S	A. Gnoumou 16263
Philenoptera cyanescens (Schumach. & Thonn.) Roberty	p	GC	A. Gnoumou 16275
Pseudarthria hookeri Wight & Arn.	p	GC-SZ	A. Gnoumou 16564
Pterocarpus erinaceus Poir.	p	SZ	A. Gnoumou
Pterocarpus santalinoides DC.	p	GC	A. Gnoumou 16308, 16342, 16381
Rhynchosia densiflora (Roth) DC.	t	Pal	A. Gnoumou 16536, 16609
Rhynchosia minima (L.) DC.	t	Pan	A. Gnoumou 16492, 16545, 16571
Sphenostylis schweinfurthii Harms	p	S	
Tephrosia elegans Schumach.	t	GC	
Tephrosia pedicellata Bak.	t	S	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Tephrosia platycarpa Guill. & Perr.	t	S	A. Gnoumou 16507
Teramnus labialis (L. f.) Spreng.	t	Pan	A. Gnoumou 16610, 16631
Uraria picta (Jacq.) DC.	t	Pan	A. Gnoumou 16527
Vigna filicaulis Hepper	t	GC	
Vigna heterophylla A.Rich.	t	PRA	A. Gnoumou 16613, 16630
Vigna luteola (Jacq.) Benth.	t	GC	A. Gnoumou 16504
Vigna racemosa (G. Don) Hutch. & Dalziel	t	GC	
Vigna reticulata Hook. f.	t	S	A. Gnoumou 16498
Vigna venulosa Baker	t	S	A. Gnoumou 16568
Xeroderris stuhlmannii (Taub.) Mendonça & E.C.Sousa	p	SZ	
Fabaceae-Mimosoideae			
Acacia dudgeonii Craib ex Holland	p	S	
Acacia macrostachya Rchb. ex DC.	p	SZ	
Acacia polyacantha Willd. subsp. *campylacantha* (Hoechst. ex A. Rich.) Brenan	p	PRA	
Acacia seyal Delile	p	S	
Acacia sieberiana DC.	p	AT	A. Gnoumou 16368
Albizia malacophylla (A. Rich.) Walp. *var. ugandensis* Bak. f.	p	S	
Albizia zygia (DC.) J.F. Macbr.	p	PRA	A. Gnoumou 16274
Chamaecrista pratensis (R.Vig.) Du Puy	t	Pal	A. Gnoumou 16432
Dichrostachys cinerea (L.) Wight & Arn.	p	Pan	
Entada abyssinica Steud. ex A. Rich.	p	S	
Entada africana Guill. & Perr.	p	SZ	
Entada walberjii Harv.	p	S	A. Gnoumou 16309
Mimosa pigra L.	p	Pan	
Parkia biglobosa (Jacq.) R. Br. ex G. Don	p	Pal	
Prosopis africana (Guill. & Perr.) Taub.	p	S	
Gentianaceae			
Canscora diffusa (Vahl) R. Br. ex Roem. & Schult.	t	Pal	A. Gnoumou 16596
Hydroleaceae			
Hydrolea palustris (Aubl.) Raeusch.	t	GC	
Hypericaceae			
Psorospermum corymbiferum Hochr.*var corymbiferum*	p	S	A. Gnoumou 16476
Psorospermum senegalense Spach	p	S	
Lamiaceae			
Clerodendrum capitatum (Willd.) Schumach.	p	GC	A. Gnoumou 16403, 16448
Gmelina arborea Roxb.	p	Cu	
Haumaniastrum buettneri (Gürke) J.K. Morton	c	S	
Hoslundia opposita Vahl	p	Am	
Hyptis suaveolens Poit.	t	Pal	A. Gnoumou 16518
Ocimum gratissimum L.	t	Pal	A. Gnoumou 16562
Platostoma africanum P.Beauv.	t	Pal	
Plectranthus gracillimus (T.C.E.Fr.) Hutch. & Dany	t	S	A. Gnoumou 16480
Plectranthus monostachyus (P.Beauv.) B.J.Pollard	t	PRA	
Tectona grandis L. f.	p	Pan	
Vitex chrysocarpa Planch.ex Benth.	p	SZ	
Vitex doniana Sweet	p	AT	
Vitex madiensis Oliv.	p	S	
Lecythidaceae			
Napoleonaea heudelotii A.Juss.	p	GC	A. Gnoumou 13639
Napoleonaea vogelii Hook. & Planch.	p	GC	A. Gnoumou 13631
Linderniaceae			
Lindernia parviflora (Roxb.) Haines	t	Pal	A. Gnoumou 16512
Loganiaceae			
Spigelia anthelmia L.	t	Pan	A. Gnoumou 16528
Strychnos congolana Gilg	p	GC	A. Gnoumou 13627
Strychnos innocua Delile	p	SZ	A. Gnoumou 16254
Strychnos spinosa Lam.	p	AM	
Strychnos usambarensis Gilg	p	PRA	A. Gnoumou 16291, 16410
Loranthaceae			
Agelanthus dodoneifolius (DC.) Polhill & Wiens	ep	S	
Lythraceae			
Ammannia auriculata Willd.	t	Pan	A. Gnoumou 16588

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Ammannia baccifera L.	t	PRA	A. Gnoumou 16670
Ammannia prieureana Guill. & Perr.	t	S	A. Gnoumou 16660
Malpighiaceae			
Flabellaria paniculata Cav.	p	GC	
Malvaceae			
Bombax costatum Pellegr. & Vuill.	p	S	
Ceiba pentandra (L.) Gaertn.	p	Pan	
Christiana africana DC.	p	GC	A. Gnoumou 13281, 16304, 16412
Cola cordifolia (Cav.) R. Br.	p	S	A. Gnoumou 16319
Cola laurifolia Mast.	p	GC	A. Gnoumou 16297
Corchorus fascicularis Lam.	t	Pal	A. Gnoumou 16428
Corchorus tridens L.	t	Pal	A. Gnoumou 16515
Grewia bicolor Juss.	p	SZ	
Grewia cissoides Hutch. & Dalziel	c	S	A. Gnoumou 16203, 16389
Grewia flavescens Juss.	p	Pal	
Grewia lasiodiscus K.Schum.	p	S	A. Gnoumou 16262
Hermannia tigreensis Hochst. ex A.Rich.	t	AT	A. Gnoumou 16645
Hibiscus cannabinus L. [cult.]	t	PRA	
Hibiscus sabdariffa L. [cult.]	t	Pan	A. Gnoumou 16429
Hibiscus squamosus Hochr.	t	S	A. Gnoumou 16447
Hibiscus surattensis L.	t	Pan	A. Gnoumou 16615
Melochia corchorifolia L.	p	AA	
Sida alba L.	t	Pan	A. Gnoumou 16300
Sida javensis Cav.	c	GC	A. Gnoumou 16516
Sida urens L.	t	Pan	
Sterculia setigera Delile	p	AT	
Triumfetta rhomboidea Jacq.	t	Pal	
Wissadula rostrata (Schumach.) Hook.f.	p	PRA	
Meliaceae			
Khaya senegalensis (Desr.) A.Juss.	p	S	
Pseudocedrela kotschyi Harms	p	S	
Trichilia emetica Vahl subsp. *emetica*	p	Pan	
Menispermaceae			
Chasmanthera dependens Hochst.	p	SZ	A. Gnoumou 13634
Triclisia subcordata Oliv.	p	GC	
Moraceae			
Dorstenia cuspidata Hochst. ex A.Rich.	g	AT	A. Gnoumou 16406
Ficus asperifolia Miq.	p	AT	A. Gnoumou 16292, 16350
Ficus cordata Thunb.	p	AT	
Ficus dicranostyla Mildbr.	p	S	A. Gnoumou 16636
Ficus elasticoides De Wild.	p	GC	A. Gnoumou 13624
Ficus exasperata Vahl.	p	PRA	
Ficus ingens (Miq.) Miq.	p	SZ	A. Gnoumou 16327
Ficus platyphylla Delile	p	S	
Ficus sur Forssk.	p	SG	A. Gnoumou 16363
Ficus thonningii Blume	p	S	
Milicia excelsa (Welw.) C.C.Berg	p	GC	A. Gnoumou 16374
Myrianthus serratus (Trécul) Benth. & Hook.	p	GC	A. Gnoumou 13638, 16347, 16348
Myrtaceae			
Eucalyptus camaldulensis Dehn.	p	Cu	
Syzygium guineense (Willd.) DC. subsp. *guineense*	p	AT	
Ochnaceae			
Lophira lanceolata Tiegh. ex Keay	p	S	
Ochna rhizomatosa (Tiegh.) Keay	p	S	A. Gnoumou 16360, 16388
Ochna schweinfurthiana F.Hoffm.	p	PRA	A. Gnoumou 16329, 16414
Olacaceae			
Olax subscorpioidea Oliv.	p	GC	
Ximenia americana L.	p	Pan	A. Gnoumou 16362
Oleaceae			
Schrebera arborea A. Chev.	p	GC	
Onagraceae			
Ludwigia abyssinica A.Rich.	p	PRA	A. Gnoumou 16597

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Ludwigia adscendans (L) Hara	c	Pan	A. Gnoumou 16664
Ludwigia hyssopifolia (G. Don) Exell	c	Pan	A. Gnoumou 16637
Opiliaceae			
Opilia amentacea Roxb.	p	SZ	A. Gnoumou 13273, 16255
Orobanchaceae			
Micrargeria filiformis (Schumach. & Thonn.) Hutch. & Dalziel	t	S	A. Gnoumou 16534
Sopubia parviflora Engl.	t	S	A. Gnoumou 16629
Sopubia ramosa (Hochst.) Hochst.	t	S	A. Gnoumou 16584, 16625
Striga asiatica (L.) Kuntze	t	Pal	A. Gnoumou
Striga hermonthica (Delile) Benth.	t	PRA	A. Gnoumou 16522
Striga macrantha (Benth.) Benth.	t	S	
Striga passargei Engl.	t	S	A. Gnoumou 16565
Oxalidaceae			
Biophytum umbraculum Welw.	t	SZ	A. Gnoumou 16549
Passifloraceae			
Passiflora foetida L.	c	Pan	A. Gnoumou 16392
Pedaliaceae			
Ceratotheca sesamoides Endl.	c	SZ	
Phyllanthaceae			
Bridelia ferruginea Benth.	p	SZ	
Bridelia micrantha (Hochst.) Baill	p	PRA	A. Gnoumou 16271
Bridelia scleroneura Müll. Arg.	p	AM	A. Gnoumou 16376
Flueggea virosa (Willd.) Voigt subsp. *virosa*	p	Pal	
Hymenocardia acida Tul.	p	AT	A. Gnoumou 13274, 13275, 16366
Hymenocardia heudelotii Müll. Arg.	p	GC	A. Gnoumou 16358
Phyllanthus muellerianus (O. Ktze) Exell	p	PRA	A. Gnoumou 16293
Phyllanthus reticulatus Poir.	p	PRA	A. Gnoumou 16378
Phyllanthus sublanatus Schum. & Thonn.	t	S	A. Gnoumou 16543
Uapaca togoensis Pax	p	S	A. Gnoumou 16270
Plantaginaceae			
Dopatrium junceum Buch.-Ham. ex Benth.	t	Pal	A. Gnoumou 16666
Limnophila indica (L.) Druce	t	Pal	A. Gnoumou 16593, 16599
Scoparia dulcis L.	t	Pan	A. Gnoumou 16470
Polygalaceae			
Polygala arenaria Willd.	t	PRA	A. Gnoumou 16468, 16548
Polygala baikiei Chodat	t	GC	A. Gnoumou 16634
Polygala butyracea Heckel	t	AT	A. Gnoumou 16632, 16633
Polygala erioptera DC.	t	Pal	A. Gnoumou 16623
Securidaca longipedunculata Fresen.	p	AT	
Primulaceae			
Embelia guineensis Bak.	p	GC	A. Gnoumou 16289, 16307, 16364
Embelia rowlandii Gilg	p	S	A. Gnoumou 13630, 16261
Putranjivaceae			
Drypetes floribunda (Müll. Arg.) Hutch. (Figure 6)	p	GC	A. Gnoumou 16314, 16330
Rhizophoraceae			
Cassipourea congoensis R. Br. ex DC.	p	GC	A. Gnoumou 16278, 16312, 16333, 16395
Rubiaceae			
Borreria ocymoides (Burm.f.) DC.	t	GC	A. Gnoumou 16579
Coffea ebracteolata (Hiern) Brenan	p	GC	A. Gnoumou 16303
Cremaspora triflora (Thonn.) K. Schum.	p	PRA	A. Gnoumou 16370, 16386
Crossopteryx febrifuga (Afzel. ex G.Don) Benth.	p	AT	
Fadogia agrestis Schweinf. ex Hiern	p	S	
Fadogia cienkowskii Schweinf.	c	SZ	
Feretia apodanthera Delile	p	S	
Gardenia aqualla Stapf & Hutch.	p	SZ	
Gardenia erubescens Stapf & Hutch.	p	S	
Gardenia nitida Hook. (Figure 4)	p	GC	A. Gnoumou 16313
Gardenia ternifolia Schumach. & Thonn.	p	Pal	
Geophila repens (L.) I.M.Johnston	g	Pan	A. Gnoumou 16605
Keetia cornelia (Cham. & Schltdl.) Bridson	p	GC	
Keetia venosa (Oliv.) Bridson	p	GC	
Macrosphyra longistyla (DC.) Hiern	p	S	

Appendix 1. Continued.

Family and species	Lf	Chor.	Voucher specimen number
Mitracarpus hirtus (L.) DC.	t	PRA	
Mitragyna inermis (Willd.) Kuntze	p	SZ	
Morelia senegalensis A.Rich.	p	G	A. Gnoumou 16290, 16338
Oldenlandia herbacea (L.) Roxb.	t	Pal	A. Gnoumou 16552
Oldenlandia lancifolia (Schumach.) DC.	t	PRA	
Oxyanthus racemosus (Schumach. & Thonn.) Keay	p	GC	A. Gnoumou 16336, 16394
Pavetta corymbosa (DC) F.N.Williams	p	GC	A. Gnoumou 16369, 16384, 16385
Pavetta crassipes K.Schum.	p	S	A. Gnoumou 16367
Psychotria psychotrioides (DC.) Roberty	p	S	A. Gnoumou 16356, 16371
Rytigynia senegalensis Blume	p	S	
Sarcocephalus latifolius (Sm.) E.A.Bruce	p	SZ	
Spermacoce filifolia (Schumach. & Thonn.) J.-P.Lebrun & Stork	t	S	A. Gnoumou 16638
Spermacoce octodon (Hepper) J.-P.Lebrun & Stork	t	S	A. Gnoumou 16490
Spermacoce quadrisulcata (Bremek.) Verdc.	t	GC	A. Gnoumou 16650
Spermacoce radiata (DC.) Hiern	t	AT	
Spermacoce ruelliae DC.	t	S	
Spermacoce stachydea DC.	t	S	
Tarenna pavettoides (Harv.) Sim	p	GC	A. Gnoumou 13621
Rutaceae			
Afraegle paniculata (Schum. & Thonn.) Engl.	p	GC	A. Gnoumou 16339
Zanthoxylum zanthoxyloides (Lam.) Zepern. & Timler	p	SZ	
Salicaceae			
Dissomeria crenata Hook. F. ex Benth.	p	S	A. Gnoumou 13280, 16353
Flacourtia indica (Burm.f.) Merr.	p	Pal	A. Gnoumou 16405
Oncoba spinosa Forssk. (Figure 8)	p	Pal	A. Gnoumou 16280
Sapindaceae			
Allophylus africanus P.Beauv.	p	PRA	A. Gnoumou 16259
Allophylus spicatus (Poir.) Radlk.	p	PRA	A. Gnoumou 16402
Cardiospermum halicacabum L.	g	Pan	
Lecaniodiscus cupanioides Planch.	p	GC	A. Gnoumou 16317
Paullinia pinnata L.	p	AA	
Zanha golungensis Hiern	p	S	
Sapotaceae			
Manilkara multinervis (Bak.) Dubard	p	GC-SZ	
Manilkara obovata (Sabine & G. Don) J.H. Hemsl.	p	GC	A. Gnoumou 16282
Mimusops kummel Bruce ex A. DC.	p	S	A. Gnoumou 16311, 16401
Pouteria alnifolia (Baker) Roberty	p	PRA	
Synsepalum pobeguinianum (Pierre ex Lecomte) Aké Assi & L.Gaut.	p	GC	
Vitellaria paradoxa C. F. Gaertn.	p	S	
Solanaceae			
Capsicum annuum L. [cult.]	c	Cu	
Sphenocleaceae			
Sphenoclea zeylanica Gaertn.	t	Pan	A. Gnoumou 16661
Urticaceae			
Pouzolzia guineensis Benth.	t	GC	A. Gnoumou 16608
Verbenaceae			
Lantana ukambensis (Vatke) Verdc.	p	S	
Stachytarpheta angustifolia (Mill.) Vahl	t	GC	
Vitaceae			
Ampelocissus leonensis (Hook. f.) Planch.	p	GC	
Cayratia gracilis (Guill. & Perr.) Suess.	p	AT	
Cissus aralioides (Welw. ex Bak.) Planch.	p	PRA	A. Gnoumou 16513
Cissus doeringii Gilg & M.Brandt	p	S	A. Gnoumou 16506
Cissus palmatifida (Baker) Planch.	p	AT	A. Gnoumou 16505
Cissus petiolata Hook.f.	p	GC	
Cissus populnea Guill. & Perr.	p	S	
Cissus quadrangularis L.	p	Pal	
Cyphostemma adenocaule (Steud. ex A.Rich.) Desc. ex Wild & R.B.Drumm.	p	AT	
Cyphostemma cymosum (Schumach. & Thonn.) Desc.	p	AT	
Cyphostemma junceum (Webb) Wild & R.B.Drumm.	g	AT	
Cyphostemma vogelii (hook. f.)Desc	p	AT	

Figures 4–9. 4: *Gardenia nitida*. **5:** *Aframomum sceptrum*. **6:** *Drypetes floribunda*. **7:** *Guibourtia copallifera*. **8:** *Oncoba spinosa*. **9:** *Carissa edulis*.

Figures 10–14. 10: *Thonningia sanguinea*. **11:** *Abrus precatorius*. **12:** *Berlinia grandiflora*. **13:** Forest gallery in border of river Comoé. **14:** Woodland dominated by *Isoberlinia doka*.